POLYAKOV, L.K.; LIKHTER, A.D.; AFONCHIKOV, N.A.

Automation of rotor setting in conical mills. Bumagodel. mash. no.8:52-65 '60. (MIRA 14:3)
(Papermaking machinery)

TYMINSKAYA, S. Yu.; LIKHTER, A.D.; Prinimali uchastiye: ETKIN, Ye.I., starshiy inzh.; SHELKOVNIKOV, Yu.V.

Automated machine for cutting slots in screen sieves. Bumagodel. mash. no.8:140-157 '60. (MIRA 14:3)

1. Nauchno-issledovatel'skiy institut po proyektirovaniyu bumagodelatel'nikh mashin (for Etkin). 2. Nachal'nik byuro instrumentov i prisposobleniy zavoda im. 2-y Pyatiletki (for Shelkovnikov).
(Papermaking machinery)

LIKHTER, A.D.

Industrial sample of an electrical automatic rotor setting of a conical refining mill. Bumagodel.mash. no.9:64-71 '61. (MIRA 15:1)

(Papermaking machinery)

LIKHTER, A.D.

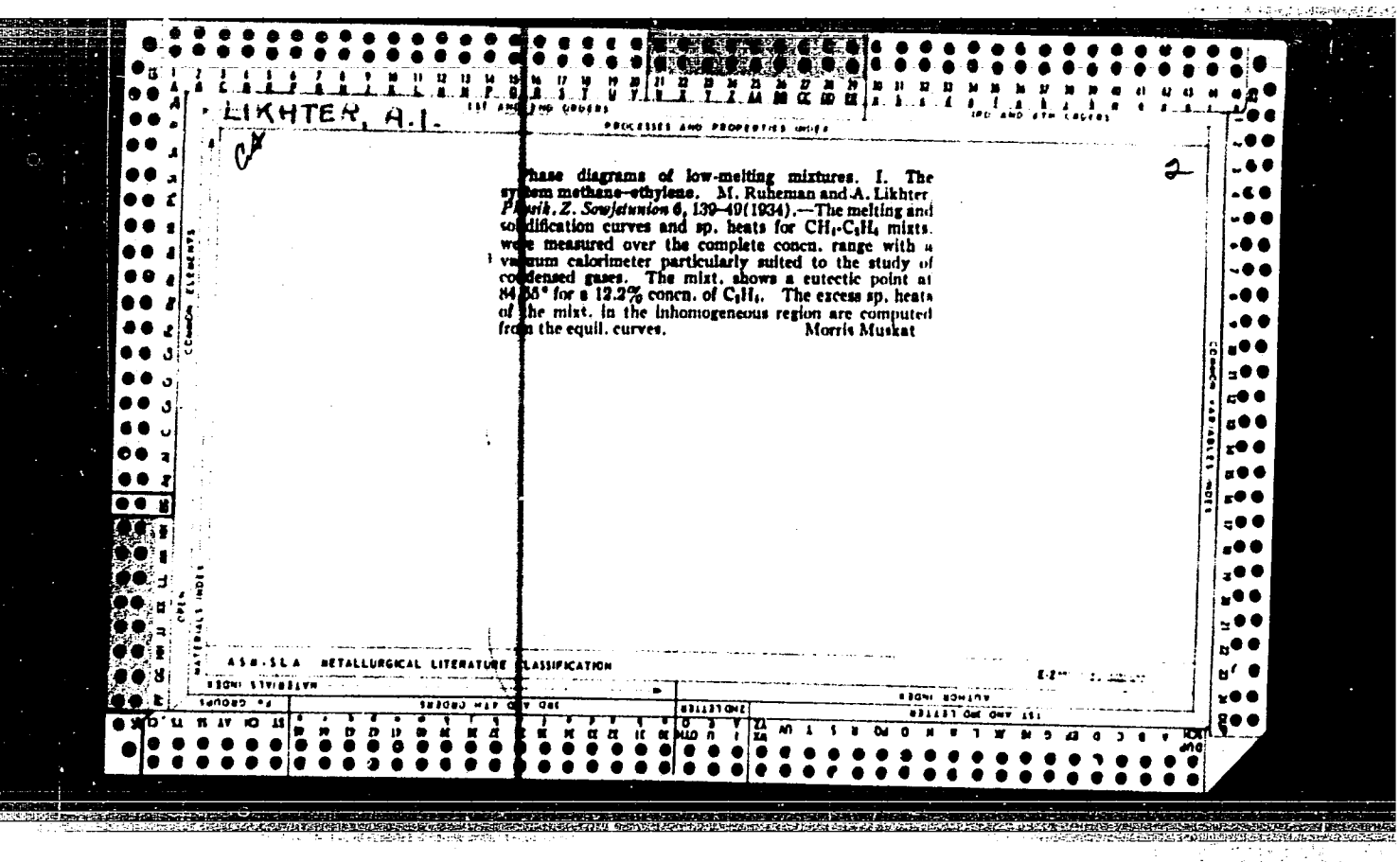
Automation of the new and modernized paper- and cardboard-making machines. Bum.prom. 37 no.10:9-10 O '62. (MIRA 15:11)

1. Nachal'nik konstruktorskogo byuro otdela privodov i avtomatiki TSentral'nogo nauchno-issledovatel'skogo instituta bumagodelatel'nogo mashinostroyeniya.
(Papermaking machinery) (Automatic control)

LIKHTER, A.I.; VENTTSEL', V.A.

Hall effect in cerium in a first-order phase transition. Fiz.tver. tela 4 no.2:485-489 F '62. (MIRA 15:2)

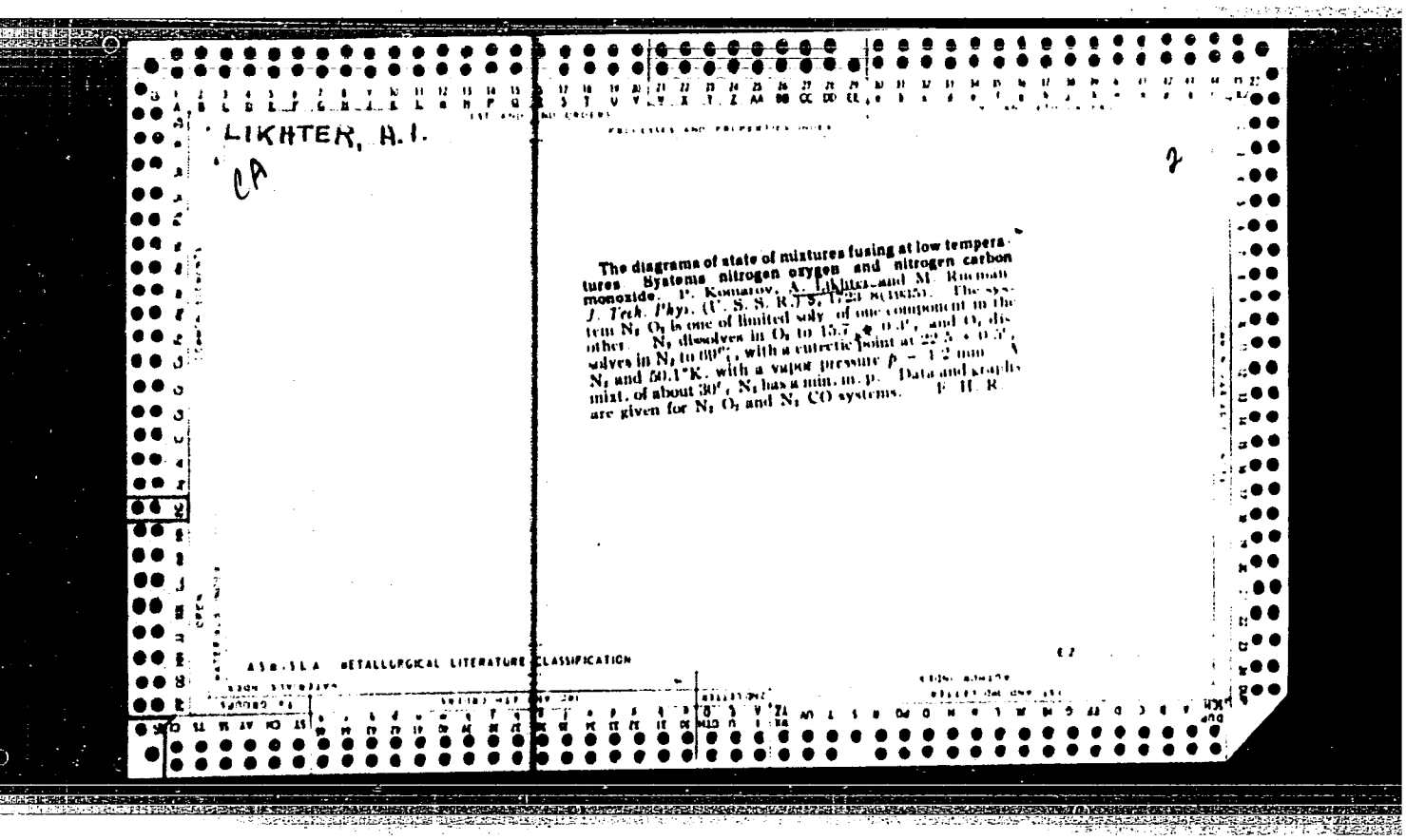
1. Institut fiziki vysokikh davleniy AN SSSR, Moskva.
(Hall effect) (Cerium)



LIKHTER, A.I.

Phase diagrams of low-melting mixtures. I. The system methane-ethylene. M. Ruheman and A. Likhter. *Physik. Z. Sowjetunion* 6, 139–49 (1934).—The melting and solidification curves and sp. heats for CH_4-C_2H_4 mixts. were measured over the complete concn. range with a vacuum calorimeter particularly suited to the study of condensed gases. The mixt. shows a eutectic point at 84.55° for a 12.2% concn. of C_2H_4. The excess sp. heats of the mixt. in the inhomogeneous region are computed from the equil. curves. Morris Muskat

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



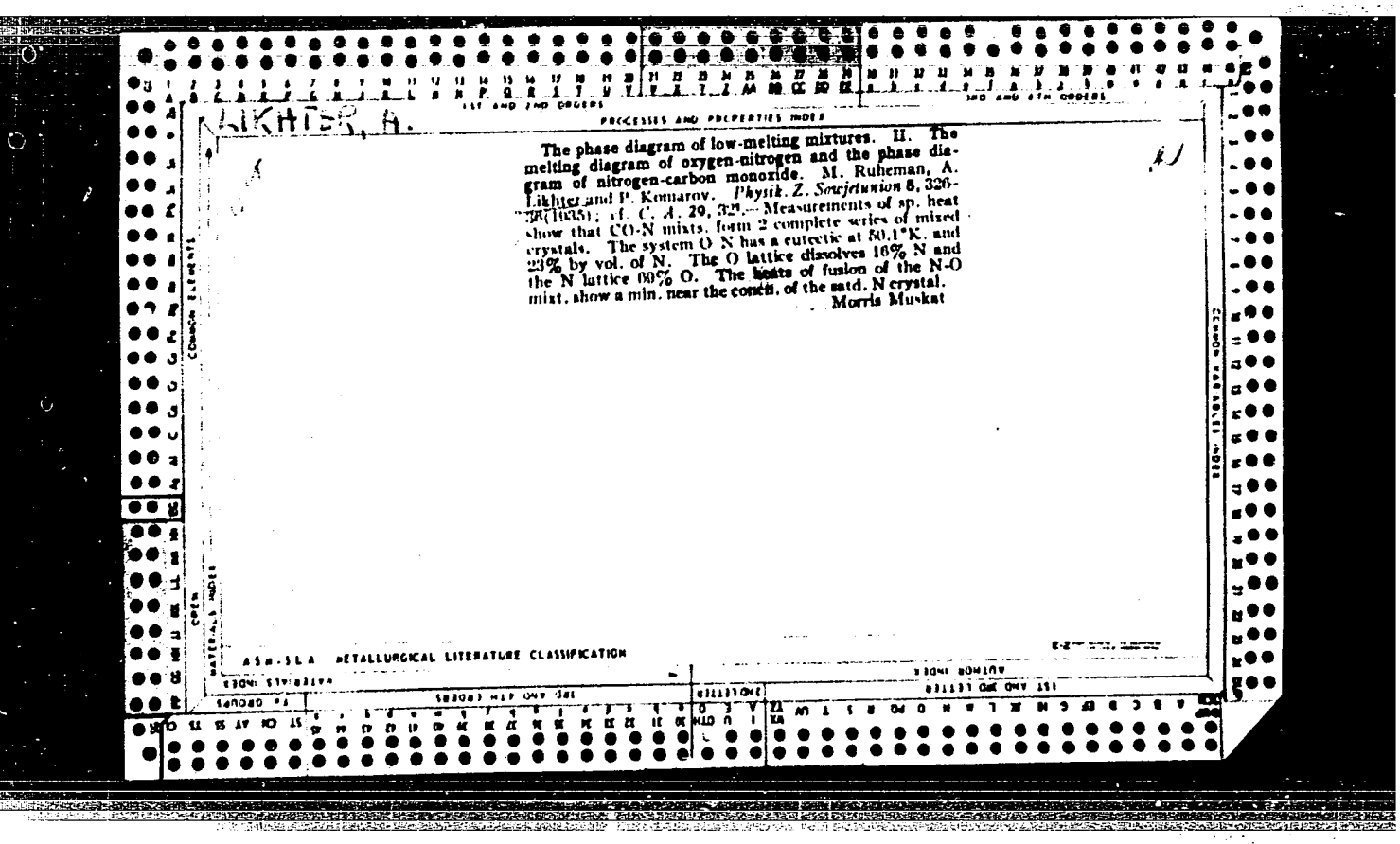
LIKHTER, A.I.

CA

2

The diagrams of state of mixtures fusing at low temperatures. Systems nitrogen oxygen and nitrogen carbon monoxide. P. Kamarov, A. Likhter, and M. Rutman. *J. Tech. Phys.* (U. S. S. R.) 5, 1721-8(1935). The system N_2 O_2 is one of limited solv. of one component in the other. N_2 dissolves in O_2 to 15.7 ± 0.1°, and O_2 dissolves in N_2 to 0.0°, with a eutectic point at −22.5 ± 0.3°, N_2 and 50.1°K. with a vapor pressure p = 12 mm. mixt. of about 30°. N_2 has a min. in p. Data and graphs are given for N_2 O_2 and N_2 CO systems. P. H. R.

A58-51A METALLURGICAL LITERATURE CLASSIFICATION

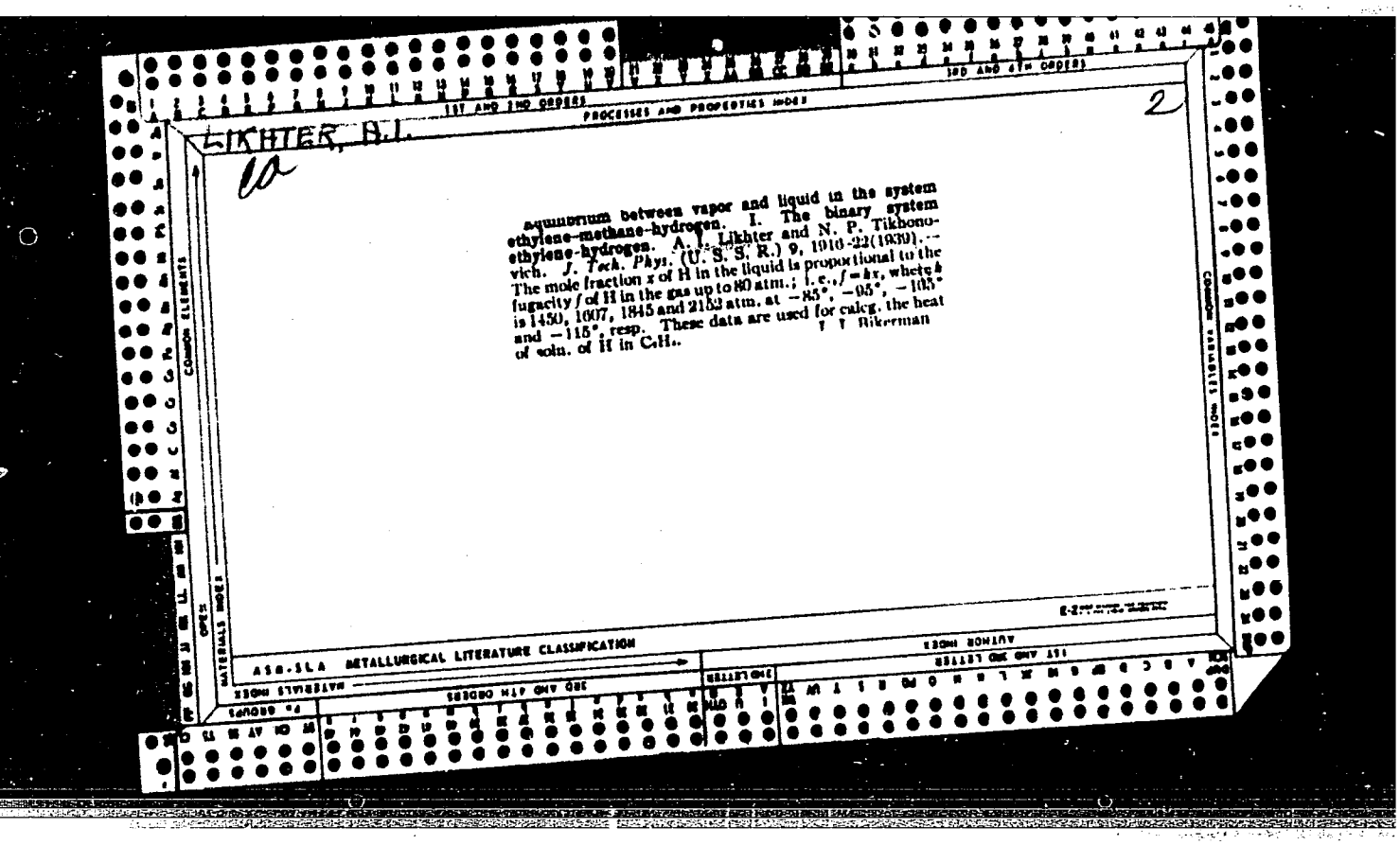


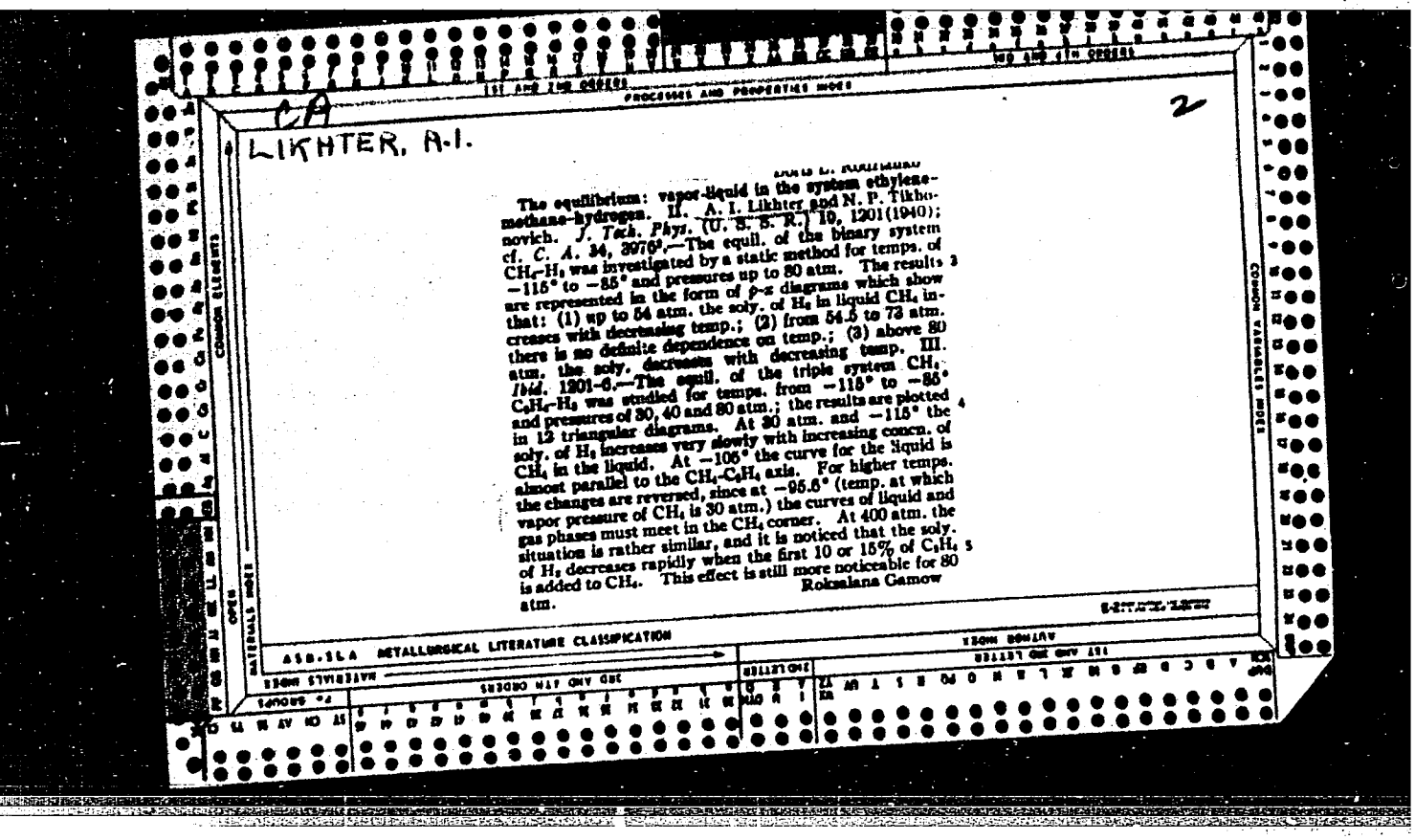
LIKHTER, A.

The phase diagram of low-melting mixtures. II. The melting diagram of oxygen-nitrogen and the phase diagram of nitrogen-carbon monoxide. M. Ruheman, A. Likhter and P. Komarov. *Physik. Z. Sowjetunion* 8, 326-38(1935); cf. *C. A.* 29, 325.—Measurements of sp. heat show that CO-N mixts. form 2 complete series of mixed crystals. The system O N has a eutectic at 50.1°K. and 23% by vol. of N. The O lattice dissolves 16% N and the N lattice 09% O. The heats of fusion of the N-O mixt. show a min. near the concn. of the satd. N crystal.

Morris Muskat

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION





CA

LIKHTER, A.I.

2

The equilibrium: vapor-liquid in the system ethylene-methane-hydrogen. II. A. I. Likhter and N. P. Tikhonovich. *J. Tech. Phys.* (U. S. S. R.) 10, 1201(1940); cf. *C. A.* 34, 3976⁹.—The equil. of the binary system CH_4–H_2 was investigated by a static method for temps. of −115° to −85° and pressures up to 80 atm. The results are represented in the form of p-x diagrams which show that: (1) up to 54 atm. the soly. of H_2 in liquid CH_4 increases with decreasing temp.; (2) from 54.5 to 73 atm. there is no definite dependence on temp.; (3) above 80 atm. the soly. decreases with decreasing temp. III. *Ibid.* 1201–6.—The equil. of the triple system CH_4–C_2H_4–H_2 was studied for temps. from −115° to −85° and pressures of 30, 40 and 80 atm.; the results are plotted in 12 triangular diagrams. At 30 atm. and −115° the soly. of H_2 increases very slowly with increasing concn. of CH_4 in the liquid. At −105° the curve for the liquid is almost parallel to the CH_4–C_2H_4 axis. For higher temps. the changes are reversed, since at −95.6° (temp. at which vapor pressure of CH_4 is 30 atm.) the curves of liquid and gas phases must meet in the CH_4 corner. At 400 atm. the situation is rather similar, and it is noticed that the soly. of H_2 decreases rapidly when the first 10 or 15% of C_2H_4 is added to CH_4. This effect is still more noticeable for 80 atm.

Roksalana Gamow

Likhter, A. I.

5

USSR

539.383

6947. Dependence of the compressibility of the elements on their atomic number. L. F. VERESHCHAGIN AND A. I. LIKHTER. *Dokl. Akad. Nauk SSSR*, 86, No. 4, 745–7 (1952) in Russian.

Calculates from available data, and graphs, the compressibility of 30 elements at 100 000 kg/cm² and of 50 elements at 30 000 kg/cm², plotted against their atomic numbers. The periodicity is preserved even at 100 000 kg/cm². The compressibility range (ratio of largest to least compressibility) decreases from 1 to 100 000 kg/cm², being 310 at 1, 36 at 30 000, and 9 at 100 000 kg/cm², the least compressible element being always C (diamond), and the most compressible Cs (at 1 and 30 000 kg/cm²) and Ba (at 100 000 kg/cm²). The alkali metals are the most compressible at 1 and 30 000 kg/cm², while the alkaline earth metals occupy peak values at 100 000 kg/cm². The polymorphic transition of Cs at 45 000 kg/cm², accompanied by a volume change of 5·6‰ is probably due to the transition of a 6*s* electron to the 5*d* level. The alkaline earth metals show a much smaller volume change at very high pressures. F. LACHMAN

LIKHTER, A.I.

546.87 : 538.632 500

Dependence of Hall Effect in Bismuth on Pressure.—L. F. Vereshchagin & A. I. Likhter. (*C. R. Acad. Sci. U.R.S.S.*, 11th Aug. 1955, Vol. 103, No. 5, pp. 791–794.) Measurements are reported at pressures up to 10 000 kg/cm² in magnetic fields up to 10 000 oersted; the Hall e.m.f. decreases with increasing pressure.

EL

(1)

Lab. Superhigh Physics, Acad. Sci USSR

LIKHTER, A.I.

Category : USSR/Atomic and Molecular Physics - Physics of high pressure D-6

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 910

Author : Vereshchagin, L.F., Likhter, A.I., Ivanov, V.I.
Title : Production of Superhigh Pressures in a Setup Employing a Conical Piston

Orig Pub : Zh. tekhn. fiziki, 1956, 26, No 4, 874-877

Abstract : To eliminate packing gaskets, which are the weak point in super-high pressure setups, a compression chamber was developed with a conical piston. The conical piston is pressed into a carefully ground socket and normal pressure is produced on the periphery of the cone. The cone angle is chosen to make this pressure always greater than the pressure produced by the piston in the liquid, thereby insuring hermeticity. The construction is described and the design calculations (employing the theory of elasticity) are given for the first version of such a setup. A pressure up to 14,000 kg/cm^2 was obtained, the pressures being measured with a manganin manometer.

Lab Superhigh-Physics, Acad. Sci. USSR

Card : 1/1

LIKHTER, A.I.

LIKHTER, A.I.

56-4-49/52

AUTHOR: LIKHTER, A.I., KIKOIN, A.K.

TITLE: The Influence of Exposure to Radiation by Neutrons on the Compressibility of Metals.
(Vliyaniye neytronnogo oblucheniya na szhimayemost' metallov. Russian).

PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 4, pp 945 (U.S.S.R.)

ABSTRACT: First of all, the paper under review gives a brief summary of the present stage reached in the consideration of the above problem. According to the relevant investigations carried out so far, such exposure to radiation has either no effects or only very slight effects.

The authors of the paper under review investigated in a nuclear reactor the influence of the exposure to radiation by fast neutrons with respect to the compressibility of aluminum and magnesium. Because this compressibility is directly connected with the modulus of elasticity and with the modulus of shearing, and because the observations failed to detect any change of these moduli in the substances investigated, it is probable that the compressibility will not undergo any noticeable changes under influence of the exposure to radiation by neutrons. The cylindrical samples of a height of 6 mm and of a diameter of 6 mm were made of technologi-

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The Influence of Exposure to Radiation by Neutrons on the Compressibility of Metals.

cally pure electrolytical material. The compressibility was investigated by means of a device for the measuremant of the spatial compressibility employing the method of the shift of the piston. A description of this method will be given in another paper. The influeone of friction was taken into account by recording the curves of the 'shift of the piston pressure' at decreasing and increasing pressure, and then computing their mean value. The measruements were carried out after having applied pressure to the sample up to a maximum pressure of about 15.000 kg/cm^2.

The samples were exposed to radiation in a nuclear reactor, and the total current of the neutrons amounted to $1.07.10^{19}$ n/cm^2. After exposure to radiation, the compressibility was measured under the same conditions as before the exposure to radiation. In this context the measurements, due to the remanent activity of the samples, could be carried out only three days after the exposure to radiation had been terminated. With respect to aluminum and magnesium, the curves of the 'shift of the piston pressure' are completely identical, both before and after the exposure to radiation, i.e. the exposure to radiation does not affect the com-

LIKHTER, A.I.

AUTHORS Likhter, A.I., Ryabinin, Yu.N., Vereshchagin, L.F. 56-3-10/59

TITLE Phase Diagram of Cerium.
(Fazovaya diagramma tseriya.-Russian)

PERIODICAL Zhurnal Eksperim.i Teoret.Fiz., 1957, Vol 33, Nr 3, pp 610-613 (U.S.S.R.)

ABSTRACT The p - T diagram of a 99.8 % chemically pure cerium preparation was measured in the temperature range +100°C to -71°C and the following points were found:

T°C	p(kg/cm²)
+94,5	11100
+20	8100
+17	7600
+4	7150
-71	3550
-150 (exterpolated)	1

The phase equilibrium line in the - p - T diagram is a straight line with the inclination 43 kg/cm² .grad.
There are 1 table, 3 figures and 1 Slavic reference.

ASSOCIATION Laboratory for Maximum Pressures, ANUSSR.
(Laboratoriya fiziki sverkhvysokikh davleniy Akademii nauk SSSR.)

SUBMITTED March 26, 1957

AVAILABLE Library of Congress.

Card 1/1

MONAKHOV, N.I., inzh., glavnyy red.; TURIANSKIY, M.A., inzh., zamestitel' glavnogo red.; LIKHTER, A.I., inzh., red.; KHAVIN, B.N., red. izd-va; EL'KINA, E.M., tekhn.red.

[Collection No.23 of consolidated cost indexes of buildings and structures serving automotive transportation to be used in revaluating capital assets] Sbornik no.23 ukrupnennykh pokazatelei stoimosti zdanii i sooruzhenii avtomobil'nogo transporta i avtomobil'nykh dorog dlia pereotsenki osnovnykh fondov. Moskva, 1959. 35 p. (MIRA 13:1)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam stroitel'stva.
(Transportation--Buildings and structures)

LIKHTER, A.I.; D'YAKONOVA, T.S.

Measuring the effect of pressures of up to 10,000 kg/cm^2 on the Hall effect in n-type germanium. Fiz.tver.tela 1 no.1:95-103 Ja '59. (MIRA 12:4)

(Germanium) (Hall effect)

LIKHTER, A.I.

Effect of pressure on the Hall effect of p-type germanium with a specific resistance of 50 ohm-cm. Fiz. tver. tela 1 no.6:895-898 Je '59. (MIRA 12:10)

1.Laboratoriya fiziki sverkhvysokikh davleniy AN SSSR, Moskva.
(Hall effect) (Germanium--Electric properties)

S/120/60/000/01/040/051
E192/E382

AUTHOR: Likhter, A.I.

TITLE: Equipment for the Investigation of Galvanomagnetic Phenomena at Pressures up to 30 katm

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, Nr 1, pp 131 - 132 (USSR)

ABSTRACT: A cross-sectional diagram of the equipment is given in Figure 1. The matrix 1, having a height of 20 mm and an external diameter of 45 mm, is situated inside a cone having an angle of 2°. The matrix is inserted into the conical aperture of the plate 2 made of steel which was heat-treated to a hardness of $R_c = 40$. Two conical plugs 3 and 4, made of non-magnetic steel, are inserted into the base plate below and above the matrix. During the assembly two lead plates having a thickness of 1 mm are inserted between the matrix and the plugs. The lower plug 4 is actuated through the support 5 from the plunger of the lower press 6. The stresses are thus produced not only on the outer surface of the matrix but also on its

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26244
S/194/61/000/001/001/038
D216/D304

24.2100 1057, 1160, 2108

AUTHOR: Likhter, A.I.

TITLE: Installation for electrical measurements at low temperatures at pressures up to 10,000 atm

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 1, 1961, 4, abstract 1A18 ("PTE", no. 2, 1960, 127-130)

TEXT: A description is given of an installation, designed at the Institut fiziki vysokikh davleniy (High-Pressure Physics Institute) of the AS USSR, for measuring the resistance, the Hall effect, emf, and the dependence of resistance on the magnetic field at low temperatures and at pressures up to 10,000 atm. The pressure was conveyed by solid nitrogen at the temperature of liquid nitrogen. The preventive measures are discussed which were undertaken so that the pressure conveyed by solid nitrogen would be near the hydrostatic one. The results obtained using the installations are given. These

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Installation for electrical... S/194/61/000/001/001/038
D216/D304

results relate to the pressure, the resistivity of a copper wire, the Hall effect in bismuth, and in the p-type germanium in a magnetic field. 10 references.

Card 2/2

82903
S/120/60/000/02/034/052
E041/E421

24.5600

AUTHOR: Likhter, A.I.

TITLE: Arrangement for Low Temperature Electrical Measurements at 10000 Atmospheres Pressure

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, Nr 2, pp 127-130 (USSR)

ABSTRACT: An apparatus has been developed for measuring resistance, Hall emf and the dependence of resistance on magnetic field. The pressure is transmitted by a column of solid nitrogen at the temperature of liquid nitrogen. Measurements show that the distribution of pressure is quite closely hydraulic. The working temperature is 77°K; if a reduction to 20°K is needed, solid hydrogen must be used. Fig 1 shows a cross-section through the compression chamber. The piston 1 (10 mm diameter) pushes the head 2 into the matrix 3. The latter is of beryllium bronze heat-treated to a hardness of 38 to 40 on the R_c scale. The matrix is a taper-fit (0.5° drift angle) into the stainless steel (1X18H9T) block 4, fixed into the tube 8. The bottom of the matrix is closed by the obturator 5 secured by the nut 6. The obturator

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E041/E421

Arrangement for Low Temperature Electrical Measurements at 10000 Atmospheres Pressure

carries 4 leads and supports the sample. Gas may be fed into the matrix, through the elbow 9, at a pressure of 20 atm. The main thrust causing compression comes from oil pressure in the upper cylinder. Fig 2 shows the relationship between piston displacement (measured with a KM-6 cathetometer) and pressure in the actuating cylinder for increasing and decreasing pressure. The averaged curve (after Bridgman) is also plotted. To ensure as nearly as possible hydraulic distribution of pressure in the solid nitrogen three precautions must be observed: 1. reduction of chamber size to smallest practicable; 2. slow changes in pressure; 3. a delay of at least 10 minutes after a pressure change before readings are taken. Fig 3 shows how the resistance of copper wire varies with pressure at 77°K. This result disagrees with one previously published (Ref 10); this may be due to the presence of impurities. Fig 5 gives the variation in Hall effect and Fig 6 that of resistance in a magnetic field for p-type germanium. The author thanks

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82903
S/120/60/000/02/034/052
E041/E421

Arrangement for Low Temperature Electrical Measurements at 10000 Atmospheres Pressure

L.F.Vereshchagin and V.M.Mal'tsev for assistance.
There are 6 figures and 10 references, 4 of which are Soviet, 5 English and 1 German.

ASSOCIATION: Institut fiziki vysokikh davleniy AN SSSR
(High Pressure Physics Institute, Academy of Sciences, USSR)

SUBMITTED: February 2, 1959

Card 3/3

83015
S/181/60/002/008/034/045
B006/B063

24.7800

AUTHORS: Sekoyan, S. S., Likhter, A. I.

TITLE: The Effect of Pressure on the Galvanomagnetic Properties of Bismuth

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 8, pp. 1940 - 1942

TEXT: In the introduction, the authors discuss several articles on this subject by Bridgman, N. Ye. Alekseyevskiy, N. B. Brandt, L.F.Vereshchagin, T. S. D'yakonova,and others. The present paper describes measurements of electrical conductivity, Hall effect, and resistivity in a magnetic field as a function of the hydrostatic pressure on single crystals of bismuth in the three principal directions (trigonal system). The samples - plates 8 x 2 x 1 mm large with preset orientation of their axes - were made by a method due to L. V. Shubnikov. The bismuth used for this purpose was 99.99%. The orientation of the crystals was checked by X-ray analysis. The axes of the Cartesian coordinate system are indicated by 1, 2, and 3; 1 lies in the longitudinal and 2 in the transverse direction of the sample. In this notation, the current direction was always in 1 and the field

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direction in 3. ϱ_{ip} denotes the resistance, R_{ip} the Hall constant, Q_{ip} the coefficient of change in resistivity in a magnetic field, i = 1,2,3 the direction of the trigonal axis of the crystal, and p the pressure. Thus, Fig. 1 shows $\varrho_{ip}/\varrho_{io} = f(p)$, Fig. 2 $R_{ip}/R_{io_2} = f(p)$, and Fig. 3 $Q_{ip}/Q_{io} = f(p)$ at pressures of up to 10,000 kg/cm^2. The pressure has a particularly strong effect on the anisotropy of the Hall constant: R_{3p}/R_{3o} increases by about five times its amount, whereas R_{2p}/R_{2o} decreases by 7±0.5%. In the pressure range for which investigations were made, Q_{ip}/Q_{io} is practically constant and equal to unity. Carrier concentration and carrier mobility were calculated from these results according to the model of an ellipsoid of revolution. The values of μ_{ip}/μ_{io} and ν_{ip}/ν_{io} are given in a table. The values of μ_i denote the electron mobility and those of ν_i the hole mobility in the respective directions of the axes of the ellipsoid. As a result of the pressure of 10,000 kg/cm^2, the hole mobility in the direction of the trigonal axis becomes about

S/181/62/004/002/030/051
B101/B102

AUTHORS: Likhter, A. I., and Ventsel', V. A.

TITLE: Hall effect in cerium during a phase transition of the first kind

PERIODICAL: Fizika tverdogo tela, v. 4, no. 2, 1962, 485 - 489

TEXT: A study has been made of the phase transition accompanied by an abrupt change in volume of Ce at pressures of up to 10,000 atm and at room temperature by measuring both the Hall emf and the resistance. The apparatus used for the purpose was similar to that described by A. I. Likhter and T. S. D'yakonova (FTT, 1, 95, 1959). The Hall emf was measured with an Ф-12 (F-12) photoelectric amplifier. The Ce specimen (7.5·2·0.12 mm) contained 0.02% Fe, < 0.75% Nd + Pr, and < 0.001% Cd + Pb + Bi + Sn. X-ray analysis showed no hexagonal phase in the specimen. Pure gasoline was used for pressure transmission. A sudden drop of the Hall emf was found between 7600 and 8000 atm. With decreasing pressure the transition likewise occurred in the same pressure range. The transition point was not shifted by a 100-fold rise or drop of pressure. At atmospheric pressure, the Hall coefficient A_p was $(2.0 \pm 0.05) \cdot 10^{-4}$ cm^3/coulomb. As the

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Hall effect in cerium during a ...

magnetic field was non-uniform, the ratio A_p/A_o was used, where A_o is the value obtained by F. K. Speeding et al. (Phys. Rev., 91, 1372, 1953). A constant value of 0.25 A_o was reached at 10,000 atm. A discussion on the basis of data concerning the conductivity of rare-earth metals indicates that the Hall coefficient is changed by the transition of a 4f electron into 5d shell. A phase transition induced by pressure and at room temperature is more complete than one induced by cooling. L. F. Vereshchagin, Corresponding Member AS USSR, is thanked for a discussion. There are 1 figure, 1 table, and 12 references: 5 Soviet and 7 non-Soviet. The four most recent references to English-language publications read as follows: R. D. Beecroft, C. A. Swenson, J. Phys. Chem. Solids, 15, 234, 1960; J. M. Lock, Proc. Phys. Soc. (London), B70, 566, 1957; M. K. Wilkinson, Phys. Rev., 122, 1409, 1961; C. J. McHargue, H. L. Jakel, Jr. Acta Met., 8, 637, 1960.

ASSOCIATION: Institut fiziki vysokikh davleniy AN SSSR, Moskva (Institute of High-pressure Physics, AS USSR, Moscow)

SUBMITTED: September 25, 1961

Card 2/2

LIKHTER, A.I.; KECHIN, V.V.

Dependence of galvanomagnetic effects in graphite on temperature and pressure. Fiz. tver. tela 5 no.11:3066-3074 N '63. (MIRA 16:12)

1. Institut fiziki vysokikh davleniy AN SSSR, Moskva.

ARKHIPOV, R.G.; KECHIN, V.V.; LIKHTER, A.I.; POSPELOV, Yu.A.

Galvanomagnetic effects in graphite and deformation of the electron spectrum of graphite under pressure. Zhur. eksp. i teor. fiz. 44 no.6:1964-1973 Je '63. (MIRA 16:6)

1. Institut fiziki vysokikh davleniy AN SSSR.
(Graphite—Galvanomagnetic properties)
(Electrons—Spectra)

LIKHTER, A.I.

Establishing planned sections in road construction. Avt.dor. 27 no.11:19 N '64. (MIRA 18:4)

L 1572-66 EWT(1)/EWT(m)/EWP(t)/EWP(b) IJP(c) JD

ACCESSION NR: AP5019214 UR/0056/65/049/001/0036/0046

AUTHOR: Kechin, V. V.; Likhter, A. I.; Pospelov, Yu. A.

TITLE: Dependence of the galvanomagnetic effects in Sb on the temperature and the pressure

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 1, 1965, 36-46

TOPIC TAGS: antimony, galvanomagnetic effect, Hall constant, specific resistance, magnetoresistance, crystal lattice structure, pressure effect

ABSTRACT: To determine the variation of the energy spectrum of antimony, accompanying a gradual reduction of the crystal parameter ratio c/a and of the corner angle difference 60° - α under high hydrostatic pressure, the authors investigated the pressure dependence of certain galvanomagnetic coefficients at room temperature. The coefficients studied were the two resistivity components, the two Hall coefficients, and the eight magnetoresistance components, which were measured at pressures up to 10,000 atm. The apparatus employed was described earlier (FTT v. 5, 3066, 1963). The preparation and the installation of the samples are described. Measurements were also made of the temperature dependence of these coefficients at 293, 273, 195, and 77K under atmospheric pressure. The results show that the num-

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L 1572-66

ACCESSION NR: AP5019214

3

ber of carriers is independent of the temperature (T), but the mobility is proportional to T^p ($p = 1.3--1.4$). The deformation of the electronic Fermi surface by the pressure is calculated. The carrier density is shown to decrease under pressure. The effective mass anisotropy increases with the increasing pressure, but the tilt of the electronic ellipsoids is decreased by about 7° at 10,000 atm. Orig. art. has: 7 figures, 7 formulas, and 3 tables.

ASSOCIATION: Institut fiziki vysokikh davleniy Akademii nauk SSSR (Institute of High-pressure Physics, Academy of Sciences, SSSR) 44,55

SUBMITTED: 27Jan65 ENCL: 00 SUB CODE: SS, EM

NR REF SOV: 008 OTHER: 009

Card 2/2

L 44812-66 EWT(l)/EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6032021 SOURCE CODE: UR/0386/66/004/006/0216/0220

AUTHOR: Venttsel', V. A.; Likhter, A. I.; Rudnev, A. V.

ORG: Institute of High-Pressure Physics, Academy of Sciences SSSR (Institut fiziki vysokikh davleniy Akademii nauk SSSR)

TITLE: The de Haas - van Alphen effect in Zinc in pulsed magnetic fields

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 6, 1966, 216-220

TOPIC TAGS: zinc, galvanomagnetic effect, Fermi surface

ABSTRACT: The authors investigated the de Haas - van Alphen effect in zinc in pulsed magnetic fields up to 75 kOe, inasmuch as earlier experiments in static magnetic fields up to 30 kOe did not give a sufficiently complete picture of the high-frequency oscillations connected with the large parts of the Fermi surface. The pulsed magnetic field was produced by discharging a 2000 μF capacitor bank charged to 2100 v through an inductance coil. A test coil containing the sample was placed in the center of the solenoid and its axis could be rotated ±30° relative to the direction of the magnetic field. Inasmuch as the Fermi surface of zinc is very complicated and has a large number of extremal sections in all directions of the magnetic field a resonance at 33 kcs resonant frequency was used to separate the frequencies connected with each type of Fermi-surface section. A plot of the oscillation frequency against the direction of the magnetic field is obtained for the planes

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(10$\bar{1}$0) and (11$\bar{2}$0) of Zn, and the possible Fermi-surface sections and configurations corresponding to each frequency are discussed. It is stipulated, however, that in view of the complexity of the Fermi surface of zinc, the proposed interpretation may not be fully unambiguous. The authors thank L. F. Vereshchagin for interest in the work and A. P. Kochkin for valuable discussions during the interpretation of the results. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 24Jun66/ ORIG REF: 001/ OTH REF: 006

SHISTER, Yevgeniy L.; LIKHTER, B.I., red.; TSUTSUL'KOVSKIY, I.S., tekhn.red.

[To Antarctica after whales] V Antarktiku za kitami. Moskva, Gos.izd-vo kul'turno-prosvetitel'noi lit-ry, 1948. 71 p. (MIRA 13:4)

(Antarctic regions--Whaling)

KOSTINSKIY, Dmitriy Natanovich; LIKHTER, B.I., red.; POPOVA, V.I., mladshiy red.; VILENSKAYA, E.N., tekhn.red.

Nepal. Moskva, Gos.izd-vo geogr.lit-ry, 1960. 151 p. (MIRA 13:6)

(Nepal)

LIKHTERMAN, B.V.

Use of ionic collars in treating some diseases of the nervous system. Vop. kur., fizioter. i lech. fiz. kul't. 30 no.3: 193-201 My-Je '65. (MIRA 18:12)

1. Institut meditsinskoy klimatologii i klimatoterapii imeni I.M. Sechenova (direktor - zasluzhennyy vrach UkrSSR B.V. Bogutskiy) Yalta. Submitted February 27, 1965.

L 08740-67 EWT(1)/FCC RB/GW
ACC NR: AP7001646 SOURCE CODE: UR/0203/66/006/004/0795/0796

AUTHOR: Likhter, Ya. I.

ORG: Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation, AN SSSR (Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR)

TITLE: Cyclic variations of intensity of atmospheric radio noise

SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 4, 1966, 795-796

TOPIC TAGS: solar activity, radio noise

ABSTRACT:
This communication gives the results of study of data for many stations recording the intensity of atmospheric radio noise. Seasonally averaged values were considered, relating to characteristic points on the diurnal curve: the morning minimum D, afternoon maximum E and nighttime maximum G. In some cases the evening minimum F also was considered. In most cases data at low frequencies (12, 27, 51 kc/sec) were used. Examples of the cyclic variation of the intensity of atmospheric radio noise are illustrated (for such stations as Kuhlungsborn, Pretoria and Khabarovsk). In all cases the shape of the curves is identical. In years of maximum solar activity the intensity of noise is below the median and with a decrease of solar activity negative deviations in-

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crease. In 1959-1960 the deviations were negative and maximal, after which with a continuing decrease of solar activity the intensity of the noise begins to increase. In 1961 the deviations pass through zero and in years close to the minimum of solar activity become positive. In 1962-1964 the noise intensity was maximal, but in 1965 the deviations became close to zero or even negative. In years of maximum solar activity the intensity of atmospheric noise decreases with a decrease of solar activity at both low and high frequencies. The described variation of the intensity of atmospheric noise can be explained by postulating that there is a cyclic variation of the intensity of the sources of noise (thunderstorm activity) with a rather flat minimum in years of maximum solar activity and a maximum falling in the years of the minimum of solar activity. This hypothesis does not necessarily relate to a change in the number of thunderstorms; the change may be in their intensity.

Orig. art. has: 2 figures and 1 table. [JPRS: 38,230]

SUB CODE: 17,04 / SUBM DATE: 30Oct65 / ORIG REF: 004 / OTH REF: 002

Card 2/2 bc

LIKHTER, YA. I.

Feb 1947

USSR/Rectifiers
Conductors

"Hard Rectifiers," Ya. I. Likhter, 5 pp

"Radio" Vol XX, No 2

Discussion of the use of semi-conducting material in rectifiers and photocells, special electrical properties of semi-conductors. Article includes graphical representations.

9T35

LIKHTER, Ya.I.; PROZUMENSHCHIKOV, S.M.; SOBOLEV, Ya.P.

Spectrum analyzer of signals of changing frequency. Prib. i tekh. eksp. 6 no.1:96-98 Ja-F '61. (MIRA 14:9)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR.

(Spectrum analysis)

PA 9/49T45

LIKHTER, YA. I.

USSR/Electricity Jul 48
Electrolytes
Resistance, Electrical - Changes

"The Effect of Rapid Changes of Temperature and Pressure on the Electrical Resistance of Electrolytes," Ya. I. Likhter, S. E. Khaykin, Phys Inst Imeni P. N. Lebedev, Acad Sci USSR, 9 pp

"Zhur Eksper i Teoret Fiz" Vol XVIII, No 7 (p. 647-58)

Study of very small changes in electrical resistance of an electrolyte (solution of $AgNO_3$ in water) caused by variation in pressure and temperature during propagation of ultrasound. Established that

9/49T45

USSR/Electricity (Contd) Jul 48

temperature coefficient of resistance to ultrasound at frequency 285 kc remains same for constant temperature ($\beta = 2.16 \times 10^{-2}$ degrees^{-1} at 20 C). Determination of value of piezocoefficient of electrolyte, which was found to be equal to $\gamma = 107 \times 10^{-6}$ atm^{-1} (first measured size).

9/49T45

USSR/Electronics Feb 53

LIKHTER, Ya. I.

"Amateur Ultrashort-Wave Antennas," Ya. Likhter

"Radio," No 2, pp 36-39

Gives a general description of feeder lines, symmetrical antennas, folded dipoles, antennas with a circular radiation pattern, tuned antennas, and antennas with passive reflectors. The multi-element array is most frequently used and consists of an active element, a reflector, and several directors.

LIKHTER, Ya. I.

2

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551.594.6

Some Statistical Properties of Atmospherics. Ya. I. Likhter. (*Radiotekhnika i Elektronika*, Oct. 1956, Vol. 1, No. 10, pp. 1295–1302.) An experimental determination of the amplitude probability distribution is reported; a block diagram of the apparatus and the simplified circuit-diagram of a ten-channel statistical analyser are shown. Results of measurements at 50 kc/s (bandwidth 750 c/s) indicate that the probability distribution function is given approximately by the relation $P(V) = (1 - a) \exp(-aV^2) + c \exp(-bV^2)$, where a, b, and c are constants.

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Sci Res Inst Terrestrial Magnetism

LIKHTER, Ya. I.

USSR / Radiophysics. Statistical Phenomena in Radiophysics. I-2

Abs Jour : Ref Zhur - Fizika, No 5, 1957, No 12421

Author : Likhter, Ya. I.

Inst : Scientific Research Institute for Terrestrial Magnetism, The Ionosphere, and Propagation of Radio Waves, USSR

Title : On the Connection Between the Distribution of a Quasi-monochromatic Stationary Process and the Distribution of its Envelope.

Orig Pub : Zh. eksperim. i teor. fiziki, 1956, 31, No 1, 148-149

Abstract : A formula is derived for the connection between the probability density $w_A(A)$ of the stationary envelope of a stationary random process $\xi(t) = A(t)\cos[\omega_0 t + \varphi(t)]$ with the probability density [illegible] of the process itself.

Card : 1/2

LIKHTER, Ye.I.

3(6) PHASE I BOOK EXPLOITATION SOV/1934

Leningrad. Nauchno-issledovatel'skiy institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln

Trudy, Vyp. 13. (Transactions of the Institute of Scientific Research on Terrestrial Magnetism, the Ionosphere, and Radio Wave Propagation. Nr. 13) Moscow, Gidrometeoizdat (Otd-nie), 1957. 118 p. 1,120 copies printed.

Additional Sponsoring Agency: USSR. Ministerstvo svyazi.

Ed. (Title page): Ya.L. Al'pert; Ed. (Inside book): V.I. Tarkhunova; Tech. Ed.: V.V. Mayorov.

PURPOSE: This issue of the Institute's Transactions is intended for geophysicists and technical personnel working in research organizations as well as for advanced students at universities and technical vuzes. It is also of interest to communications personnel.

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COVERAGE: This publication contains six articles on aspects of radio wave propagation. Two articles by Ya.I. Likhter treat questions dealing with atmospheric noise and interference. Articles by S.V. Borodina and G.B. Lopatina deal with long-wave radio wave propagation. All articles include diagrams, figures, tables, and references.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

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6(4); 9(3) PHASE I BOOK EXPLOITATION SOV/3125

Likhter, Yakov Iosifovich

Izmereniye atmosfernykh radiopomekh (Measuring Atomspheric Radio Interferences) Moscow, Svyaz'izdat, 1959. 27 p. (Series: Lektsii po tekhnike svyazi) Errata slip inserted. 10,300 copies printed.

Sponsoring Agency: Ministerstvo svyazi, USSR. Tekhnicheskoye upravleniye.

Resp. Ed.: Ye. Konopleva; Tech. Ed.: S. F. Karabilova; Ed.: V. I. Bashchuk.

PURPOSE: This booklet is intended for radio specialists engaged in problems of stability of radio reception and in developing radio receiving and measuring equipment.

COVERAGE: The author investigates the methods used in measuring atmospheric radio interference and describes the equipment used. He also describes Soviet participation in the IGY in the field of measuring radio interference. No personalities are mentioned.

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Measuring Atomspheric Radio Interferences SOV/3125

There are 6 references: 5 Soviet and 1 English.

TABLE OF CONTENTS:

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6.9460
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20691
S/120/61/000/001/029/062
E194/E184

AUTHORS: Likhter, Ya.I., Prozumenshchikov, S.M., and Sobolev, Ya.P.

TITLE: A Spectro-Analyser for Signals of Variable Frequency

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No.1, pp.96-98 (+ 1 plate)

TEXT: In analysing electro-magnetic signals of so-called whistling atmospherics, which are of variable voltage and of frequency which changes comparatively slowly (in 1-2 seconds the frequency alters from 20 kc/s to 400 c/s). The principal interest consists in establishing the relationship between the instantaneous frequency of the signal and the time. Theoretical considerations have shown that the instantaneous value of the frequency f alters with time as follows:

$$f^{-\frac{1}{2}} = t/D \qquad (1)$$

where D is a constant term, the dispersion, and t is reckoned from some initial instant. The constant D depends on the

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A Spectro-Analyser for Signals of Variable Frequency

properties of the medium in which the signal is propagated and on the geometric latitude of the observation point. The instrument that was developed was based on a low frequency spectro-analyser type АСН-1Х-1 (ASNChKh-1). The whistling atmospherics were recorded on a tape-recorder ring of magnetic tape. Thus a periodically repeating signal is provided for analysis. Modifications to the low frequency spectro-analyser are described. The scan is triggered by a light-beam passing through the magnetic tape at a place where the coating has been removed. Whilst the instrument is operating a scan of fifty horizontal lines appears on the cathode ray tube. The horizontal scan is the time axis and the vertical the frequency axis. Each line of the scan corresponds to adjustment of the spectrum analyser to a definite frequency and if this frequency appears at any instant of time a luminous spot appears at the corresponding place of the scan. At the next turn of the belt the analyser is tuned to a different frequency and the beam passes on to the next line of the scan showing another luminous point, and so on. A time scale is provided at intervals

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A Spectro-Analyser for Signals of Variable Frequency

of 0.1 sec. The instrument has four frequency ranges, namely 0-4, 0-12, 0-6 and 0.20 kc/s, and correspondingly different values of transmission bandwidth of 100, 200, 300 and 400 c/s. The instrument can use magnetic tape rings of various lengths with recording times from 1.5 to 2.75 seconds. Records of a typical whistling atmospheric are shown. Determination of the dispersion is facilitated by plotting in non-linear coordinates in which Eq. (1) corresponds to straight lines at a slope of 1/D. The instrument makes this possible by providing a non-linear potentiometer and when this is used the analyser generator frequency alters according to a law of $-f^{-\frac{1}{2}}$ whilst the vertical scan is linear as before. Other laws can also be obtained. There are 2 figures and 1 English reference.

ASSOCIATION: Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR (Institute of Terrestrial Magnetism, the Ionosphere and Radio-wave Propagation, AS USSR)

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SUBMITTED: February 25, 1960

27774
S/058/61/000/007/083/086
A001/A101

9,9841

AUTHORS: Likhter, Ya.I., Terina, G.I.

TITLE: Some results of inveatigating intensities of atmospheric radio interferences in Moscow

PERIODICAL: Referativnyy zhurnal, Fizika, no. 7, 1961, 353, abstract 7Zh519 (V sb. "Issled. ionosfery", no. 3, Moscow, AN SSSR, 1960, 90-94, Engl. summary)

TEXT: Four formulae are compared which were proposed by various authors for approximating the observed curves of distribution of probabilities for the envelope of field strength of atmospheric radio interferences. The following formula represents the simplest and most satisfactory approximation:

$$P(E) = 1/1 + (E/E_{50})^q,$$

where E_{50} is median of distribution, q is measure of fluctuation dynamic range, depending on frequency, diurnal time and season.

[Abstracter's note: Complete translation]

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LIKHTER, Ya.I.

Research on atmospherics in the U.S.S.R. during 1957-1959. Geomag. i aer. 1 no.2:228-231 Mr-Ap '61. (MIRA 14:7)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR.

(Radio—Interference)

LIKHTER, Ya.I.

Approximating formula of the rule of amplitude distribution of the envelope of atmospheric radio interferences. Geomag.i aer. 1 no.2: 281 Mr-Ap '61. (MIRA 14:7)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR.

(Radio—Interference)

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S/831/62/000/010/012/013
E192/E382

AUTHORS: Likhter, Ya.I., Nalivayko, A.G., Rozin, V.L., Terina, G.I. and Shevchenko, D.S.

TITLE: Measurement of atmospheric radio noise in the USSR during the IGY

SOURCE: Ionosfernyye issledovaniya. Sbornik statey, no. 10. V razdel programmy MGG (ionosfera) Mezhduv. geofiz. kom. AN SSSR. Moscow, Izd-vo AN SSSR, 1962. 102-115

TEXT: The equipment used for these measurements during the IGY at 10 different points of the Soviet Union is described. It is capable of measuring the relative time during which the value of the envelope of the atmospheric noise exceeds a given level; this quantity is defined by:

$$P(E) = \frac{1}{T}\int_0^T dt\ (E_n \geq E)$$

where E is the given level, T the measurement time and

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Measurement of ....

$dt(E_n \geq E)$ is an elementary time increment during which the value of the noise is greater than the given level. A second quantity which can be measured is the average cross-over frequency N(E), i.e. the average number of times the envelope of the noise intersects a given level. The equipment can also measure the quasi-peak values of the noise field. The system comprises a non-resonant rod antenna, 5 m long, its characteristics being almost constant at frequencies up to 10 Mc/s. The antenna can be regarded, at this frequency, as consisting of a capacitance of 100 pF and an inductance of 1.8 μH. The antenna is followed by an amplifier, a control desk, a receiver, a noise-analyzer, a recorder and a standard signal generator. All these units are described in some detail. The antenna amplifier is provided with 9 different filters at its input, covering various frequency ranges. Type P-674 (R-674) receiver, whose bandwidth was ΔF= 500 c.p.s., was employed for the frequency range 12 kc/s - 1 Mc/s. The receiver for the frequency range from 2.5 - 10 Mc/s was P-250 (R-250) having a bandwidth of ΔF = 1 kc/s. The equipment was calibrated by an audio and ultrasonic generator up to 100 kc/s, while above that the signal-generator, type

Measurement of ....

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E192/E382

ГСС-6 (GSS-6) was employed. The analyzer was an instrument, type АП-28 (AP-28), which permitted measurement of the distribution curves P(E) and N(E) as well as determination of the quasi-peak values of the noise. The equipment was used to measure the noise at various points of the Soviet Union, starting at 00 h local time, each measurement period extending over 3 h. Apart from measurement of the distribution functions P(E) and N(E), the average, maximum and minimum monthly values of the noise were calculated. There are 8 figures and 3 tables.

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LIKHTEREV, B.M., inzh.

Using airplane compressors for marine gas turbine plants.
Sudostroenie 24 no.1:31-33 Ja '58. (MIRA 11:2)
(Gas turbines) (Compressors)

S/029/62/000/010/001/001
D036/D114

AUTHORS: Lipman, G. and Likhterman, B., Designers

TITLE: Transportation on an air cushion

PERIODICAL: Tekhnika molodezhi, no. 10, 1962, 18-21

TEXT: This is a short review of arctic transportation means. Various types of past and present Soviet and Western, primarily US, wheeled and tracked cross-country vehicles, aerosleighs (ski- and boat-types) and air-cushion craft, viz. the British "Hovercraft", are briefly discussed and illustrated by simple sketches. A catamaran-type aerosleigh using the "inverted wing" effect is considered of interest. Such a craft would consist of two hulls connected by a semicylindrical surface, concave side upwards, which would provide lift. The air-cushion craft are considered the most promising. The article was published in reply to a letter sent in by four polar workers with many years experience of arctic conditions. They are: I. Papanin, Twice Hero of the Soviet Union; I.Mazuruk, Polar Pilot, Hero of the Soviet Union; Yu. Arshenevskiy, Chief Engineer of Glavsevmorput' of the

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Transportation on an air cushion

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D036/D114

Ministerstvo morskogo flota (Ministry of the Merchant Marine); D. Maksutov, Chief Engineer of the Arkticheskiy i antarkticheskiy nauchno-issledovatel'skiy institut (Arctic and Antarctic Scientific Research Institute). They strongly advocate that coordinated research work be carried out to start serial production of an air-cushion craft as soon as possible. There are 24 figures.

Card 2/2

LIKHTERMAN, B.V. (Yalta)

Ion reflexes according to A.E. Shcherbak. Vop. kur., fizioter i lech. fiz. kul't. 24 no.6:485-492 N-D '59. (MIRA 15:1)
(ELECTROPHORESIS) (IONS--THERAPEUTIC USE)

LIKHTERMAN, Boleslav Vladimirovich; ZIMOVSKIY, Boris Fedorovich; GOTOVTSEV, P.I., red.; ZUYEVA, N.K., tekhn.red.

[Treatment of neurasthenia i sanatoriums] Lechenie bol'nykh nevrasteniei v sanatornykh usloviiakh. Moskva, Gos.izd-vo med. lit-ry, 1958. 103 p. (MIRA 13:4)
(NEURASTHENIA)

LIKHTERMAN, B.V. (Yalta)

A.E. Shcherbak and his contribution to Soviet physiotherapy.
Vop. kur., fizioter. i lech. fiz. kul't. 28 no.5:386-398
S-O '63. (MIRA 17:9)

LIKHTERMAN, L.B.

Therapeutic use of acupuncture in facial neuritis and its complications. Vrach. delo no.1:150-151 Ja '62. (MIRA 15:2)

1. Aktyubinskiy psikhonevrologicheskiy dispanser.
(ACUPUNCTURE) (NERVES, FACIAL--DISEASES)

LIKHTERMAN, L.B.

Role of the examination of ventricular cerebrospinal fluid in diagnosing tumors fo the septum pellucidum. Probl.sovr.neirokhir. 4:70-75 '62. (MIRA 16:2)

(BRAIN—TUMORS)

LIKHTERMAN, L.B.

Dynamics of the electroencephalogram in tumors of the septum pallucidum of the brain. Zhur. nevr. i psikh. 63 no.2:187-194 '63. (MIRA 16:11)

1. Nauchno-issledovatel'skiy institut neyrokhirurgii imeni N.N. Burdenko (dir. - Prof. B.G. Yegorov) AMN SSSR, Moskva.

LIKHTERMAN, L.B.

Clinicoanatomical variations of tumors of the septum pellucidum. Zhur. nevr. i psikh. 63 no.10:1486-1492 '63. (MIRA 17:5)

1. Institut neyrokhirurgii imeni akademika N.N. Burdenko (dir. -prof. B.G. Yegorov) AMN SSSR Moskva . Gor'kovskiy institut travmatologii i ortopedii (dir. - dotsent M.G. Grigor'yev).

LIKHTERMAN, L.V. (Moskva)

Data from a clinical and anatomical study of tumors of the septum pellucidum. Vop.neirokhir. 25 no.3:42-47 My-Je '61. (MIRA 14:5)

1. Nauchno-issledovatel'skiy ordena Trudovogo Krasnogo Znameni institut neyrokhirurgii imeni akad. N.N. Burdenko AMN SSSR.
(BRAIN—TUMORS)

BURCHAKOV, A.S., prof.; VOROB'YEV, B.M., dotsent; AVDULOV, P.V., aspirant; SHORIN, V.G., prof.; LIKHTERMAN, S.S.; BUSAROV, Yu.F.

Experimental application of network planning in operating mines. Ugol' 40 no.11:44-47 '65. (MIRA 18:11)

1. Moskovskiy institut radioelektroniki i gornoy elektromekhaniki (for Burchakov, Vorob'yev, Avdulov, Shorin). 2. Glavnyy inzh. shakhty No.1 "Bibikovskaya" (for Likhterman). 3. Pomoshchnik glavnogo inzhenera shakhty No.1 "Bibikovskaya" (for Busarov).

LIKHTEROV, B.M.

USSR/Engineering - Mechanical, Turbine Motors

FD-2924

Card 1/1 Pub. 41 - 5/17

Author : Likhterov, B. M., Leningrad

Title : On the selection of rated velocity of air for axial compressors, used in transport and gas turbine installations.

Periodical : Izv. AN SSSR, Otd. Tekh. Nauk 6, 38-46, June 1955

Abstract : Discusses the factors which have to be considered during the initial stages of developing a gas turbine motor, especially in the selection of the rated velocity of air, as versus the desired performance specifications, total weight, size and intended specific use of the motor. Graphs, formulae. Five references, 4 USSR.

Institution :

Submitted : January 3, 1955

LIKHTEROV, B.M., inzh.

Developing methods of axial compressor design. Trudy NTO sud. prom. 8 no.1:161-186 '58. (MIRA 13:5)
(Compressors)

LIKHTEROV, B.M., inzh.

Selection of principle rated parameters for an axial compressor stage. Trudy MTO sud.prom. 8 no.1:187-201 '58. (MIRA 13:5)
(Compressors)

59931

10,3000

S/024/59/000/06/008/028
E194/E255

AUTHOR: Likhterov, B. M. (Leningrad)

TITLE: An Analysis of Tests on the Axial Compressors of a Gas Turbine Operating Under a Wide Range of Conditions

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1959, Nr 6, pp 59-67 (USSR)

ABSTRACT: This article analyses the main results of tests on two identical axial compressors. The compressor blading was designed from the generalised results of tests on flat stationary assemblies of blading. The compressor stages have a constant head over the length of the blade, and a reaction at the mean radius of 0.5. The angle between the absolute mean vector speed and the compressor axis is constant along the radius. Blade twisting was calculated from the mean distribution of axial velocity along the radius, the distribution itself being determined from the condition of radial equilibrium of an ideal rotating fluid. The compressor had 11 stages; the blade height in the first stage was 81 mm and in the last 39 mm. The object of the tests was to determine experimentally

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An Analysis of Tests on the Axial Compressors of a Gas Turbine Operating Under a Wide Range of Conditions

the overall characteristics of the compressor and to obtain data about the operation of individual stages. Determinations were made of the distribution of total and static pressures and also absolute velocities on the runner blades of the second, fifth and seventh stages. The experimentally determined overall characteristics are plotted in Fig 1. In Fig 2 they are compared with those derived from calculations. It will be seen that the experimental efficiency of the compressor is 5 to 7% higher than the designed value and that the compression ratio is higher than the design figure. This difference is attributed to various defects of design procedure, including incorrect allowance for radial gaps in the blading and inaccurate values of expended-work factors. The article then considers improved methods of making allowance for these factors. A method of allowing approximately for the influence of radial gaps in any kind of turbo-machine is then described with reference to the diagrams of Fig 3. Successive formulae are given for the influence of the radial gap on the following:

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An Analysis of Tests on the Axial Compressors of a Gas Turbine Operating Under a Wide Range of Conditions

the quantity of air flowing through the radial gap, and its kinetic energy; the reaction between air flowing through the radial gap and the main flow; and the effect of leakage through the gap in reducing the main flow through the blading. Overall equations are then given for the influence of the radial gap on compressor performance. They show that the presence of a radial gap reduces the axial velocity, increases the relative angle of outlet, and alters the angle of flow inlet in the peripheral part of the runner, as well as incurring additional power losses. Coefficients may be calculated that allow for the influence of the radial gaps on the flow, the theoretical head, the power consumption, the adiabatic pressure and the runner efficiency. The accuracy of the procedure was checked by comparing calculated and experimental values of these coefficients, and the differences were found not to exceed 0.8%. Similarly it is easy to allow for the effect that a radial gap in the fixed blading has on the flow, the adiabatic head and the stage efficiency. Tests made on straight, flat

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An Analysis of Tests on the Axial Compressors of a Gas Turbine Operating Under a Wide Range of Conditions

assemblies of blading give relationships between the theoretical head and the flow corresponding to zero gap, whilst the efficiency and flow factors correspond to a definite gap. Compressor designs based on tests on straight, flat blade assemblies involve a factor known as the expended-work factor; it is of arbitrary value for each particular case. A similar factor is introduced with designs based on tests on individual stages, to allow for interaction between stages. This second factor is usually greater than the first, presumably because the first does not make proper allowance for the influence of radial gaps. Formulae are then derived for calculating this expended-work factor in the form of expression (3.7). This formula requires knowledge of the axial velocity ratio, which may, for approximate calculations, be obtained from the curve given in Fig 5. Graphs in Fig 6 compare tests and theoretical curves of adiabatic compression for various stages and the good agreement confirms that the method of calculating the expended-work

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An Analysis of Tests on the Axial Compressors of a Gas Turbine Operating Under a Wide Range of Conditions

factor is satisfactory. The graphs in Fig 7 compare experimental and calculated universal characteristics of the compressor. The calculated characteristics were obtained by the methods recommended in the present article. As the difference between the two curves does not exceed 1%, the methods of allowing for radial gaps described in this article can be recommended. There are 7 figures and 3 references, 1 of which is Soviet, 1 German and 1 English.

SUBMITTED: April 8, 1957

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LIKHTEROV, B.M., kand. tekhn. nauk

More exact method for calculating universal characteristics of axial compressors. Sudostroenie 25 no.3:24-29 Mr '59. (MIRA 12:5)

(Compressors)

LIKHTEROV, B.M., kand.tekhn.nauk

Calculating the general characteristics of the axial compressors of gas-turbine units. Energomashinostroenie 6 no.8:26-28 Ag '60. (MIRA 14:9)

(Gas turbines)

S/229/62/000/001/002/002
I060/I260

AUTHOR: Likhterov, B.N., Candidate of Technical Sciences

TITLE: Prevention of icing in gas turbines

PERIODICAL: Sudostroyeniye, no. 1, 1962, 79-81

TEXT: Suction of air by gas turbine engines causes a drop of heat content of the sucked-in air and lowers its temperature at the intake by up to 20°C, causing icing of parts by freezing spray even in relatively high temperatures with a resulting possible damage to engine through choking. This can be prevented by installing anti-icing installations. Author discusses various de-icing systems used in the USA and GB for aviation gas turbines, such as USA patent No. 2812899 12/XI, 1957, system used in gas turbine "Avon" RA21, Atar, RCo 12 Rolls-Royce, Gnome P-1000 and H-1000, Olymp and Rolls-Royce Dart. As the expected service life of a ship engine is considerably longer than that of the aviation engine, the ship engine will be more exposed to corrosion when de-icing by gas or by injection of anti-icing liquids is used. Author rejects also a de-icing system by electric heating because of its low reliability for longer service periods and difficult repair. Consequently, the most advisable anti-icing system is that using hot hair from a compressor.
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LIKHTEROV, B.M., kand.tekhn.nauk; IVANOV, R.A., inzh.; SHEVELEV, L.M., inzh.

Effect of sea water temperature on the efficiency of a marine steam turbine plant with a system of free-flow circulation. Sudostroenie 29 no.6:15-18 Je '63. (MIRA 16:7)
(Steam turbines, Marine) (Ocean temperature)

S/194/61/000/012/010/097
D209/D303

AUTHORS: Sevast'yanov, V. V., Likhterov, I. M., Petukhov, V.N., Sherman, B. P., Fedotov, V. K. and Golovach, V. K.

TITLE: Introducing level-meters to nonferrous metallurgy plants

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 12, 1961, 31, abstract 12A229 (Radioakt. izotopy i yadern. izlucheniya v nar. kh-ve SSSR. V. 3, M., Gostoptekhizdat, 1961, 162-164)

TEXT: Described is a high sensitivity positional level-meter (L) type УРП-1013 (URP-1013) for signalling attainment of the degree of separation between two substances of different densities without direct contact with the system under investigation. The separation is determined by recording the change of intensity of γ-radiation passing through the mixture. The instrument consists of a power unit, four radiation sources and four radiation receivers. Various installation methods of L are described, depending on the proper-

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BELKINA, G.L.; KUROYEDOV, V.A.; LAPOVOK, V.I.; LIKHTEROV, I.M.; MERMEL'SHTEYN, G.R.; OVCHARENKO, Ye.Ya.; PONOMAR', V.I.; SABAYEV, V.I.; SOTNIKOV, V.A.; FAYNBERG, L.I.; FEOKTISTOVA, N.D.

X-ray spectral analysis of brass in the process of smelting. Zav.lab. 31 no.4:427-428 '65. (MIRA 18:12)

1. Konstruktorskoye byuro "TSvetmetavtomatika" i Artemovskiy zavod tsvetnykh metallov im. E.I.Kviringa.

LIKHTEROV, V.R.; ETLIS, V.S.

Condensation of propylene oxide with some aromatic hydrocarbons.
Zhur.ob.khim. 27 no.10:2867-2871 O '57. (MIRA 11:4)
(Propylene oxide) (Hydrocarbons)
(Condensation (Chemistry))

LIKHTEROV, V.R.

PHASE I BOOK EXPLOITATION SOV/4983

International symposium on macromolecular chemistry. Moscow, 1960.

Mezhdunarodnyy simpozium po makromolekulyarnoy khimii, SSSR, Moskva, 14-18 iyunya 1960 g; doklady i avtoreferaty. Sektsiya II. (International Symposium on Macromolecular Chemistry Held in Moscow, June 14-18; Papers and Summaries) Section II. [Moscow, Izd-vo AN SSSR, 1960] 559 p. 5,500 copies printed.

Sponsoring Agency: The International Union of Pure and Applied Chemistry, Commission on Macromolecular Chemistry

Tech. Ed.: T.A. Prusakova.

PURPOSE: This book is intended for chemists interested in polymerization reactions and the synthesis of high-molecular compounds.

COVERAGE: This is Section II of a multivolume work containing papers on macromolecular chemistry. The papers in this volume treat mainly the kinetics of various polymerization reactions initiated by different catalysts or induced by radiation. Among the research techniques discussed are electron paramagnetic resonance spectroscopy and light-scattering interpolation. There are summaries in English, French and Russian. No personalities are mentioned. References follow each article.

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RAZUVAYEV, G.A.; LIKHTEROV, V.R.; ETLIS, V.S.

Decomposition of acetyloycl cohexanesulfonyl peroxide in organic solvents. Sbor. nauch. rab. Inst. fiz.-org. khim. AN BSSR no.8:44-50 '60. (MIRA 14:3)

(Cyclohexanesulfonyl peroxide)

88489

S/079/61/031/001/024/025
B001/B066

5.3200 2209

AUTHORS: Razuvayev, G. A., Likhterov, V. R., and Etlis, V. S.

TITLE: Study of the Thermal Decomposition of Acetyl-cyclohexane-sulfonyl Peroxide in Different Solvents

PERIODICAL: Zhurnal obshchey khimii, 1961, Vol. 31, No. 1, pp. 274 - 280

TEXT: The authors studied some reactions of acetyl-cyclohexane-sulfonyl peroxide which gives two different radicals in the homolytic decomposition, i. e. cyclo-$C_6H_{11}SO_2O^{\cdot}$ and $CH_3COO^{\cdot}$. Their properties could be compared and some new data on the reaction mechanism of acyl peroxides could be obtained in this way. Organic solvents with different capability of giving off their hydrogen atoms to free peroxide radicals, and saturated halogen-containing solvents were selected for this thermal peroxide decomposition. Kinetic studies wer performed in isopropyl alcohol, cyclohexane, benzene, and carbon tetrachloride. The decomposition reaction was found to obey the kinetic law of first order (Diagrams 1 - 4) (Ref. 5). The activation energies in the corresponding solvents were calculated from the slope of

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the straight line (Diagram 5). They were (kcal/mole) in i-C_3H_7OH: 25.5; in cyclo-C_6H_{12}: 23.4; in C_6H_6: 25.6; in CCl_3: 26.8. The results indicate that the decomposition rate of acetyl-cyclohexane-sulfonyl peroxide decreases in the following order, depending on the solvents used: isopropyl alcohol > cyclohexane > benzene > CCl_4. It must be noted that the values of the activation energies of these solvents differ little from one another. On reaction of the peroxide with the above solvents the following compounds were obtained: cyclohexane- and cyclohexene sulfonic acids, acetic acid, methane, methyl chloride, CO_2, methyl- and cyclohexyl esters of cyclohexane sulfonic acid, hexachloro ethane, acetone, cyclohexene. The kinetic studies of the thermal decomposition of acetyl-cyclohexane-sulfonyl peroxide, as well as the data of analysis and identification of the separated products suggest two reaction routes, a) a free-radical mechanism and b) a molecular reaction. Ad a) equations (1) - (5), ad b) equation (6):

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Study of the Thermal Decomposition of Acetyl-cyclohexane-sulfonyl Peroxide in Different Solvents

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$$\cdot C_6H_{11}SO_2 - O - O - \underset{\underset{O}{\|}}{C} - CH_3 \longrightarrow C_6H_{11}SO_2O\cdot + CH_3COO\cdot \quad (1),$$

$$CH_3COO\cdot \longrightarrow \cdot CH_3 + CO_2 \quad (2), \quad CH_3 + HR \longrightarrow CH_4 + R\cdot \quad (3)$$

$$\cdot CH_3 + CCl_4 \longrightarrow CH_3Cl + \cdot CCl_3 \quad (4), \quad C_6H_{11}SO_2O\cdot + RH \longrightarrow C_6H_{11}SO_2OH + R\cdot \quad (5),$$

$$C_6H_{11}SO_2 - O - O - \underset{\underset{O}{\|}}{C} - CH_3 \longrightarrow C_6H_{11}SO_2OCH_3 + CO_2 \quad (6).$$

Yu. A. Kaplin is thanked for his co-operation. There are 5 figures, 5 tables, and 12 references: 6 Soviet, 3 US, 2 German, and 1 Soviet patent.

SUBMITTED: January 8, 1960

Card 3/3

34985
S/190/62/004/003/005/023
B110/B144

53830

AUTHORS: Likhterov, V. R., Etlis, V. S., Razuvayev, G.A., Gorelik, A. V.

TITLE: Unsymmetrical organosulfonic acyl peroxides as initiators of vinyl polymerization

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 3, 1962, 357-360

TEXT: Unsymmetrical organosulfonic acyl peroxides were synthesized by interaction of the Ba salt of perbenzoic acid (from $NaOOCOC_6H_5$ and $BaCl_2$) with 75 % molar excess of the corresponding sulfochloride in the presence of an equimolecular water amount in the range 0 to 5°C:

$2RSO_2Cl + Ba(COCOC_6H_5)_2 \xrightarrow{H_2O} 2RSO_2OOCOC_6H_5 + BaCl_2$. The following compounds were obtained: benzoyl methane sulfonyl ($CH_3SO_2OOCOC_6H_5$) (I), benzoyl ethane sulfonyl ($C_2H_5SO_2OOCOC_6H_5$) (II), benzoyl propane-1-sulfonyl ($C_3H_7SO_2COOCOC_6H_5$) (III), benzoyl propane-2-sulfonyl (iso-$C_3H_7SO_2OOCOC_6H_5$)(IV)

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RAZUVAYEV, G.A.; LIKHTEROV, V.R.; ETLIS, V.S.

Reactions of benzoylalkanesulfonyl peroxides with organic solvents. Zhur.ob.khim. 32 no.6:2033-2039 Je '62. (MIRA 15:6)
(Sulfonic acids) (Peroxides)

L 23024-66 EWT(m)/EWP(j) IJP(c) RM

ACC NR: AP6007659 (A) SOURCE CODE: UR/0413/66/000/003/0022/0022

AUTHOR: Likhterov, V. R.; Etlis, V. S.; Tkachenko, Yu. I.; Grobov, L. N.

ORG: none

TITLE: Method of preparing vinyl chloride. Class 12, No.178368

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 3, 1966, 22

TOPIC TAGS: vinyl chloride, chlorination, ethylene

ABSTRACT: An Author Certificate has been issued for a method of preparing vinyl chloride by high-temperature chlorination of ethylene. To simplify the procedure, the chlorination is carried out with water vapor. The molar ratio for ethylene, chlorine, and water vapor is 1:1:4--5, respectively. [LD]

SUB CODE: 11, 07/ SUBM DATE: 06May63/

Card 1/1 UDC: 547:313.2'322.07

ACC NR: AP6033938 SOURCE CODE: UR/0280/66/000/004/0045/0055

AUTHOR: Likhterov, Ya. M. (Moscow); Gurin, L. S. (Moscow)

ORG: none

TITLE: Probability of segment overlap in a system of random segments

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 4, 1966, 45-55

TOPIC TAGS: probability, detection probability, Poisson distribution, set theory, atmospheric cloud, cloud cover

ABSTRACT: The probability of overlapping a nonrandom line segment by a system of random segments is considered. The solution of this problem is applied to the calculation of the probability of object detection in clouds. The problems of overlapping may be different in terms of the properties of the random segments system, the meaning of the "overlapping" concept, and the properties of overlapping. The paper deals with one such problem. The origins of the segments form a Poisson set of points, the length of which are in agreement with a given arbitrary distribution. The properties of overlapping are defined by the probability that the conditions constituting overlapping are fulfilled. The mathematical techniques developed for the solution of this problem allow for generalization toward other definitions and other properties of the overlapping. The visual observation of above-ground and above-water objects remains, despite

ACC NR: AP6033938

the availability of various technical aids, one of the main means for detection and recognition. The observation is always accompanied by the presence of one or another disturbance. With respect to the majority of factors causing disturbances in technical aids, the visual observation is disturbance-proof. There exist, however, factors which generate disturbances of visual observation. Such factors are fog, cloud cover, and various types of camoflage. The solution of the problem of overlapping is applied to the construction of a mathematical model of visual object observation under conditions of cloud cover. More precisely, a model which is designed for computation of detection probability of an aircraft in the presence of clouds. It is assumed that in the absence of clouds the probability of such detection equals one. Orig. art. has: 51 formulas.

SUB CODE: 12/ SUBM DATE: 17Feb66

Card 2/2

LIPMAN, G., konstruktor; LIKHTERMAN, B., konstruktor

The air footwear of transportation. Tekh.mol. 30 no.10:18-21 '62. (MIRA 15:12)
(Arctic regions—Transportation)
(Ground-cushion phenomenon)
(Motor sledges)

L 30343-66 EWT(d)/T/EWP(l) IJP(c)
ACC NR: AP6005756 SOURCE CODE: UR/0280/65/000/005/0023/0041

AUTHOR: Likhterov, Ya. M. (Moscow)

ORG: none

TITLE: A class of processes for the solution of matrix games

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 5, 1965, 23-41

TOPIC TAGS: linear programming, programming technique, mathematic matrix, game theory

ABSTRACT: The author investigates the theory of a class of processes for the solution of matrix games. One of the processes in this class is the Brown process (I. Robinson. An Iterative Method of Solving of Game, Ann. Math., 1951, 54, 2. 296-301 (russk. perev. v sb. "Matrichnyye igry", Fizmatgiz, 1961)). The class contains processes which converge incomparably faster. A computational procedure is presented for one of such processes. Inasmuch as every problem in linear programming may be reduced to the solution of a matrix game, the procedures investigated may be applied for the solution of linear programming problems. The author was assisted by A. D. Belonogov in the development of the

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